



BWI-Thurgood Marshall Airport Aircraft Operations and Noise Exposure

Presented by DC Metroplex BWI Community Roundtable in cooperation with Vianair, Inc.

EXECUTIVE SUMMARY

Monthly Report for November 2022

DC Metroplex BWI Community Roundtable link to Noise Exposure Monthly Reports below
<https://marylandaviation.com/environmental/environmental-compliance-sustainability/dc-metroplex-bwi-community-roundtable/>

Introduction



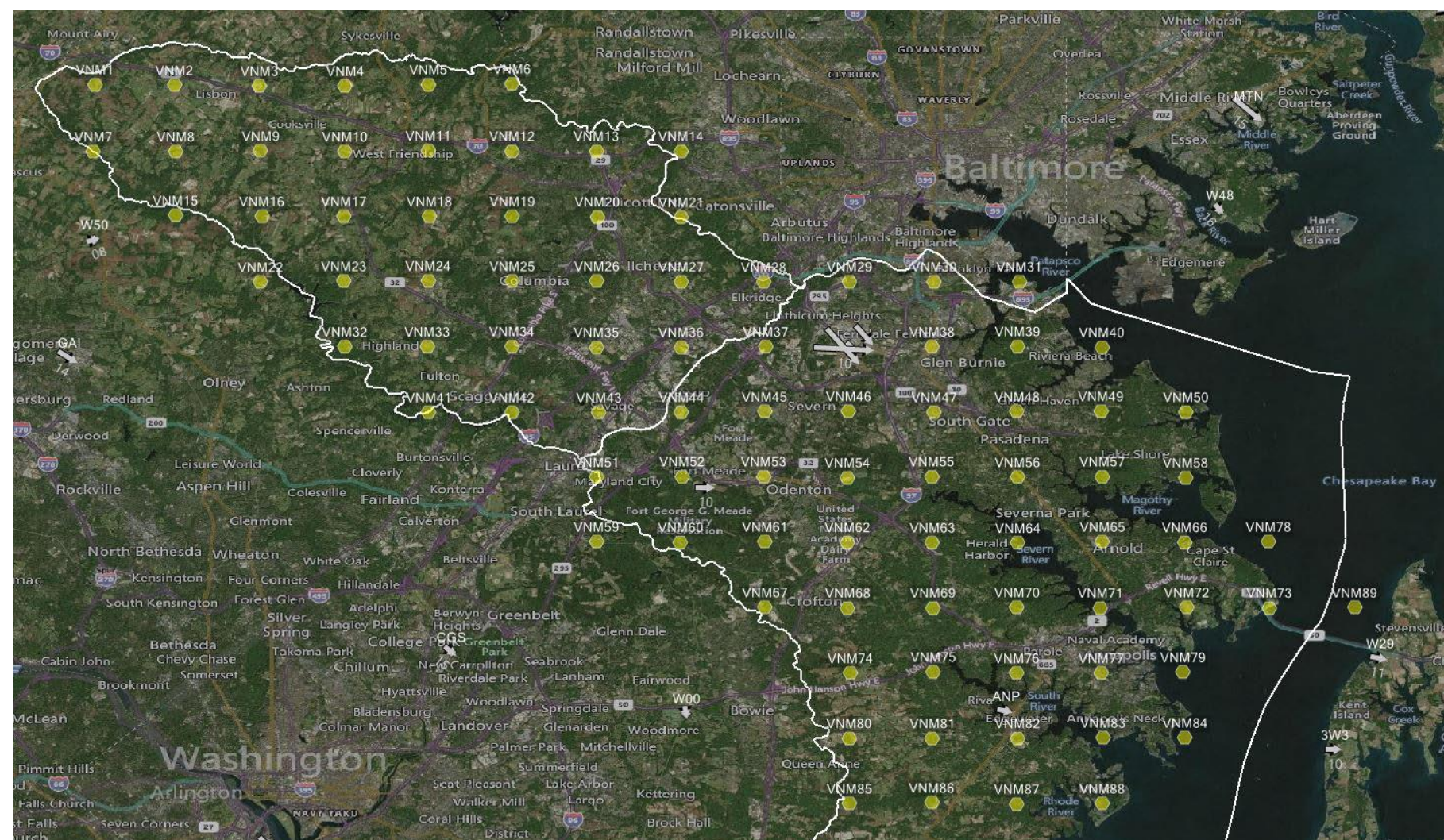
This is a summary of a larger report (the “Monthly Report”) prepared by Vianair, Inc. (“Vianair”) for the benefit of the DC Metroplex BWI Community Roundtable (the “BWI Roundtable”).

The Monthly Reports are the first comprehensive data detailing the noise pollution generated by daily commercial jet plane operations across the entire geography of significantly overflowed communities in our region. The BWI Roundtable believes that the analysis of the full environmental impact of airport operations on overflowed communities has been understudied, but it is essential information in order to improve the likelihood of success in achieving balanced solutions for the complex set of stakeholders involved in airport operations.

Howard and Anne Arundel Counties hired Vianair to help analyze flight activity in and out of BWI Thurgood Marshall Airport (“BWI-Marshall”). In coordination with representatives from the two counties and support from the BWI Roundtable, Vianair developed the Monthly Report which includes the analysis of key elements (operational and acoustic) to help the wide array of stakeholders understand the existing noise exposure and to provide the ability to track changes over time.

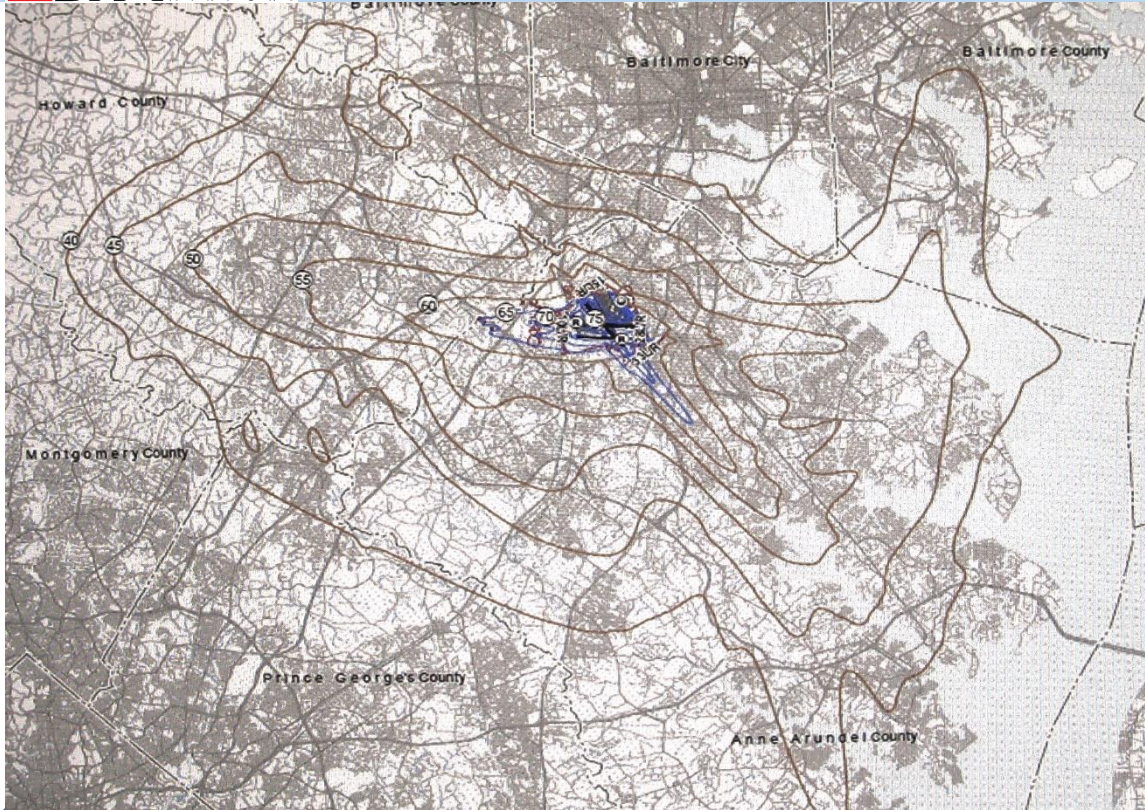
While comprehensive, the elements in the report were selected by those who contributed to the report development (representatives from the two counties and the BWI Roundtable). This report will be published monthly, beginning with March 2022. Report content may change based on input from the contributors and/or the community. This report uses A-weighted decibels or dBA and DNL, described later within this summary report.

What is the Virtual Noise Monitoring Grid?

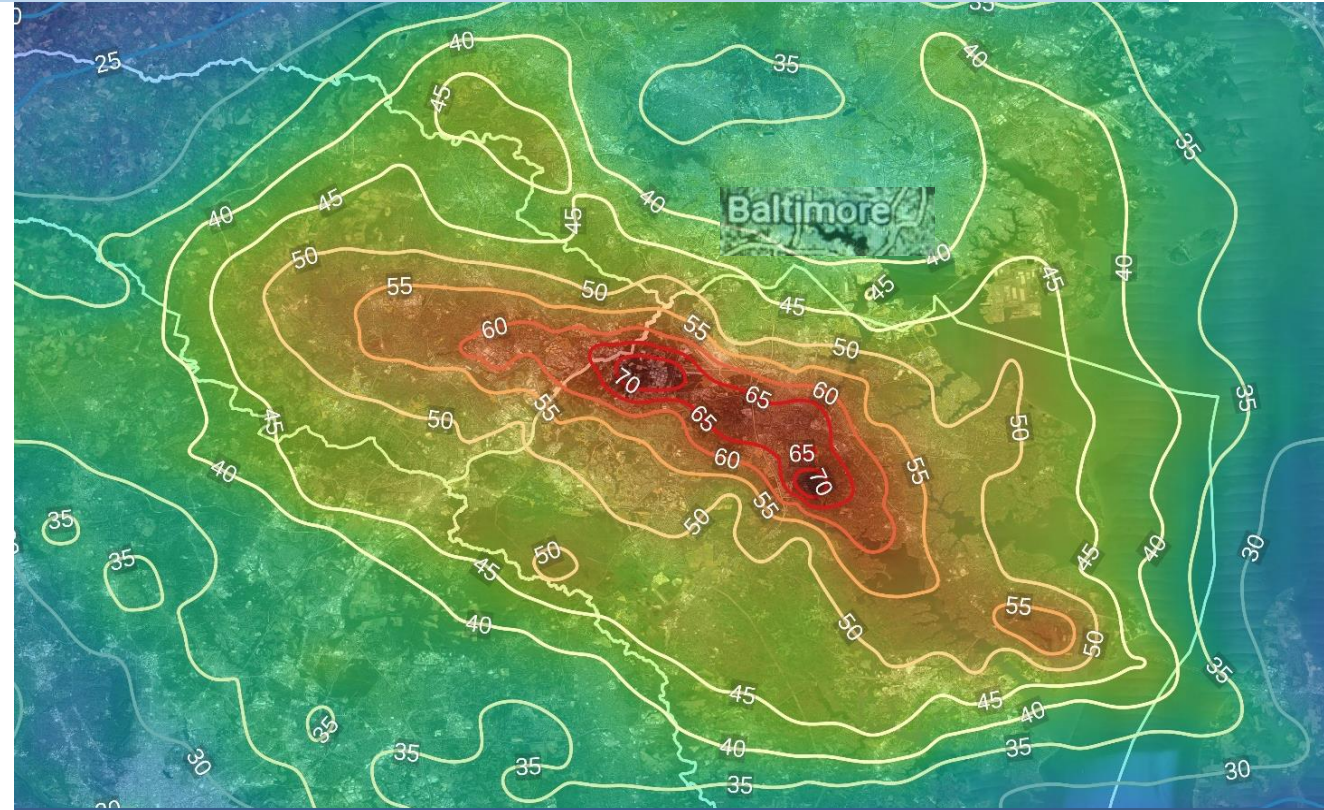


The BWI Roundtable could locate no single data source covering the entire region for the noise pollution generated by commercial aviation at BWI-Marshall. Although the Maryland Aviation Administration (MAA) maintains noise 24 permanent monitors in areas immediately surrounding the airport, these monitors are not widely dispersed across the entirety of overflowed communities. Therefore, the Roundtable asked Vianair, Inc. to establish a **virtual noise monitoring grid** with a total of 89 monitors evenly spread at 2.5-mile intervals covering most of Anne Arundel and Howard Counties (see the map on this page). An additional 36 locations in each county were selected, representing specific areas of interest or “Landmarks” (see pages 5 and 6 of this Executive Summary). The result is a total of 125 discrete locations for which aircraft noise data is collected and analyzed. These locations are referred to as “virtual noise monitor locations” in this report and result in more comprehensive coverage of the study area.

REGIONAL MAPS OF BWI-MARSHALL NOISE POLLUTION



MAA modeled *actual historical* flights projected for the 2020 Airport Noise Zone and updated in Aug 2022 for a report to the Maryland General Assembly



Vianair, Inc. modeled *actual daily* flights for Nov 2022 for the Monthly Aircraft Operations and Noise Exposure Report of the DC Metroplex BWI Community Roundtable

These images represent two versions of the mapped regional noise pollution generated by commercial flight operations at BWI-Marshall. The map on the left was generated by MDOT-MAA based on actual **historical** operations collected by the MDOT MAA's Airport Noise and Operations Monitoring System (ANOMS) with computer modeling of future expected noise. It is focused on the 65 DNL contour of the Airport Noise Zone. The Vianair-generated map on the right is based on **actual daily flights** from the airport with computer modeling of the resulting expected noise, creating a more in-depth look at all DNL noise contours.

Noise is expressed in DNL contours. For reference, the **50 DNL** contour on the *Vianair* map stretches westward to encompass the approximate boundaries of **Columbia/Clarksville**, eastward to **Fort Smallwood/Lake Shore/Annapolis** and south to **Crownsville /Millersville/Fort Meade**. The World Health Organization has identified adverse health effects at this noise level.

Monthly Noise Exposure – Anne Arundel County Landmark Locations

November 2022 – Both East and West Flow Operations

<u>Name</u>	<u>Description</u>	<u>Number-of-Events-</u>	<u>Daily Average</u>	<u>DNL</u>
		<u>Above 55 dBA</u> <u>(Total)</u>		
AAR_VNM1	RAVNN	97	3	26.6
AAR_VNM2	JETNA	168	6	30.8
AAR_VNM3	Arden on the Severn	4,998	167	60.5
AAR_VNM4	London Public House	1,421	47	41.3
AAR_VNM5	Annapolis Middle School	631	21	42.3
AAR_VNM6	West Annapolis Elementary	1,307	44	50.8
AAR_VNM7	Herald Harbor	60	2	30.1
AAR_VNM8	Eastport Terrace	653	22	42.6
AAR_VNM9	Truxton Park	740	25	44.5
AAR_VNM10	Shipley's Choice Elementary	6,403	213	74.5
AAR_VNM11	Robinwood	531	18	40.8
AAR_VNM12	Wardour Bluffs	1,195	40	49.5
AAR_VNM13	Millersville Elementary School	970	32	50.0
AAR_VNM14	Sherwood Forest	2,035	68	54.3
ARR_VNM15	Brookeville, Montgomery County	141	5	33.9
AAR_VNM16	Rolling Knolls	2,226	74	50.8
ARR_VNM17	Maryland State House	1,051	35	47.6
ARR_VNM18	I-97 and MD 178 Crownsville	903	30	49.9

This table shows the noise pollution metrics at the “Landmark” locations identified by the Roundtable for Anne Arundel County, which primarily experiences arrivals to the airport.

Locations closest to the airport and/or concentrated flight corridors many miles away from the airport will typically see the highest noise exposure. For instance, **West Annapolis Elementary School (WAES)** is approximately 23.4 miles from the end of Runway 33L, the dominant runway for arrivals. Yet, the DNL is over 50 and there were an average of 44 flight per day over 55 decibels (**11,649 such flights year-to-date 2022 since March**).

Monthly Noise Exposure – Howard County Landmark Locations

November 2022 – Both East and West Flow Operations

Name	Description	Number-of-Events-Above 55 dBA (Total)	Daily Average	DNL
HOCO_VNM1	Howard Square Apartments	8,483	283	58.8
HOCO_VNM2	HCPSS Administration Campus	4,242	141	52.2
HOCO_VNM3	Centennial Park	3,938	131	51.9
HOCO_VNM4	HoCo General Hospital	5,231	174	55.8
HOCO_VNM5	Merriweather Post Pavilion	5,479	183	57.2
HOCO_VNM6	Oakland Mills HS	5,678	189	58.1
HOCO_VNM7	Long Reach HS	5,729	191	58.9
HOCO_VNM8	Troy Park	6,869	229	61.6
HOCO_VNM9	Harwood Park N'hood	6,877	229	60.6
HOCO_VNM10	Abiding Savior Lutheran	5,413	180	55.3
HOCO_VNM11	Tridelphia Ridge ES	363	12	40.6
HOCO_VNM12	Atholton HS	4,904	163	58.1
HOCO_VNM13	Christ Church Episcopal	6,709	224	60.8
HOCO_VNM14	Mayfield Woods MS	5,873	196	61.4
HOCO_VNM15	Manor Woods ES	384	13	43.3
HOCO_VNM16	Gateway Site	6,847	228	61.2
HOCO_VNM17	Oxford Square Neighborhood	9,889	330	67.7
HOCO_VNM18	St. Louis Catholic	3,204	107	50.8

This table shows the noise pollution metrics at the “Landmark” locations identified by the Roundtable for Howard County, which primarily experiences departures from the airport.

Due to the high level of thrust required for take-offs, Howard County noise metrics are generally quite high, especially under concentrated flight corridors. For instance, **Oakland Mills High School (OMHS)** is approximately 8.3 miles from the end of Runway 28, the dominant runway for departures. Yet, the DNL is over 58 and there were an average of 189 flight per day over 55 decibels **(51,951 such flights year-to-date 2022 since March).**

Definitions

Decibel (dB(A)): A unit of measurement of sound pressure adjusted for the human ear's response to particular frequencies

Day-Night Average Sound Level (DNL): A descriptor of 24-hour noise (midnight to midnight) that adds a ten-decibel (dB) nighttime penalty to noise events which occur between the hours of 10 p.m. and 7 a.m to account for the intrusive nature of noise at night. DNL is the standard metric used by the Federal Aviation Administration ("FAA") as required by federal regulation. Federal guidelines require **DNL 65** as the level of aircraft noise exposure that is incompatible with noise-sensitive applications including residential development. This metric is required by FAA and COMAR

The Noise-above (NA): A noise metric counts the number of times the noise level exceeds a specific threshold. In this report, the Number-of-Events-Above 55 metric (NA55) is calculated. NA55 quantifies the number of aircraft events resulting in noise exposure of 55 decibels or higher at each location depicted.

Day-evening-night level (Lden): It is a descriptor of noise level defined by the European Environment Agency ("EEA") and based on energy equivalent noise level (Leq) over a whole day with a penalty of 10 dB(A) for night-time noise (11.00 pm -7.00 am) and an additional penalty of 5 dB(A) for evening noise (7.00 pm -11.00 pm).

Airport Noise Zone (ANZ): An area of land surrounding the airport within which noise levels are equal to or greater than DNL 65 dBA.

Maryland Department of Transportation Maryland Aviation Administration (MDOT MAA): Operator of Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall Airport).

Code of Maryland Regulations (COMAR): Requires MDOT MAA to control development in areas where noise levels are DNL 65 dBA or more..



For More Information ...

For more information about the contents of this report or
for questions about the DC Metroplex BWI Community Roundtable

Please visit:

<https://marylandaviation.com/environmental/environmental-compliance-sustainability/dc-metroplex-bwi-community-roundtable/>